

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
4 May 2006 (04.05.2006)

PCT

(10) International Publication Number
WO 2006/046755 A1

(51) International Patent Classification:
H04N 1/405 (2006.01) *G06T 5/00* (2006.01)
B41J 2/52 (2006.01) *H04N 1/40* (2006.01)

(74) Agent: ITOH, Tadahiko; 32nd Froor, Yebisu Garden Place Tower, 20-3, Ebisu 4-chome, Shibuya-ku, Tokyo 150-6032 (JP).

(21) International Application Number:
PCT/JP2005/020148

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 27 October 2005 (27.10.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2004-314941 29 October 2004 (29.10.2004) JP

(71) Applicant (for all designated States except US): RICOH COMPANY, LTD. [JP/JP]; 3-6, Nakamagome 1-chome, Ohta-ku, Tokyo, 1438555 (JP).

(72) Inventors; and

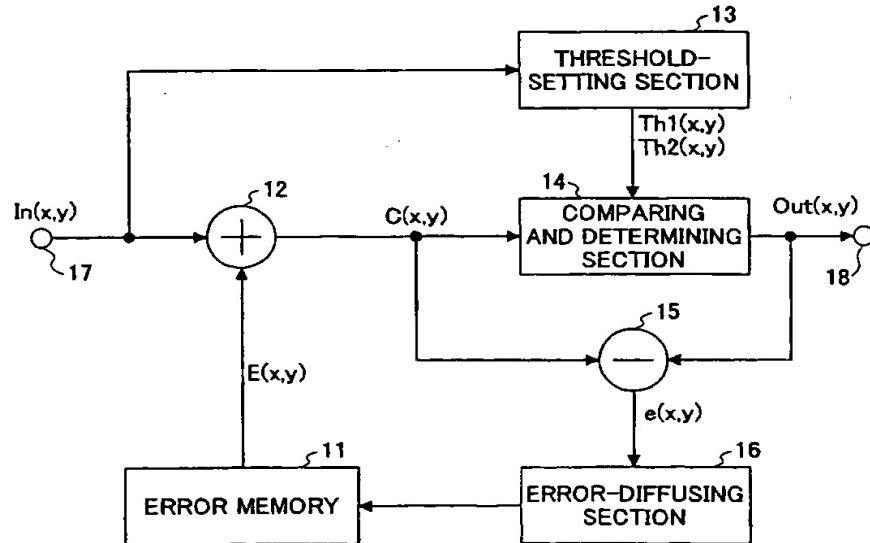
(75) Inventors/Applicants (for US only): IKE, Takahiro [JP/JP]; 2-1, Gouchicho 1-chome, Akishima-shi, Tokyo, 1960032 (JP). HIRANO, Masanori [JP/JP]; 1253-7, Shimoogino, Atsugi-shi, Kanagawa, 2430203 (JP).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

[Continued on next page]

(54) Title: AN IMAGE-PROCESSING APPARATUS, AN IMAGE-FORMING APPARATUS, AND A PROGRAM



WO 2006/046755 A1

(57) Abstract: An image-processing apparatus for quantizing multi-level (M-level) image data into N-level values, where $M > N > 1$, using a multi-level error-diffusion process or a minimum-average multi-level error method is disclosed. The image-processing apparatus includes: means for outputting correction data; means for setting a quantization-threshold value; means for comparing the correction data and the quantization-threshold value so as to output N-level image data; and means for calculating an error generated with generating the N-level image data.